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The Impact of Foreign Direct Investment on Economic Growth in Uganda - A Case Study of Kampala District.

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Abstract: *This study set out to provide evidence for the impact of foreign direct investment on economic growth with a case study of Kampala district while using consumption rates, inflation rates, gross domestic product and population growth rate as proxy variables for the period 1988-2018. It was empirically confirmed that inflation rates and population growth rate had a strong positive significant relationship with economic growth. Unit root tests were carried out using Augmented Dickey Fuller test and findings showed that some variables were non-stationary at level but were differenced to achieve stationarity. Co-integration was established using Engle Granger Co-integration test citing existence of a long run relationship amongst the variables. The speed of adjustment of the variables to long run was 47 percent within a one-year lag period. 88 percent of the variations in Economic growth were jointly explained by gross domestic product, population growth rate, inflation rates and consumption rates. 25 percent of the variations in economic growth were explained by other variables contained in the error term thus not included in the model. The F statistic was statistically significant thus inflation rate and population growth rate have a significant effect on economic growth in the short run. Autoregressive distributed lag model approach was used and the results confirmed export led hypothesis for the long run and not short run. He proposed the liberalization of trade policy instead of export expansion policies. In the Tanzanian Context, Romanus & Dickson (2019) have analyzed the export and economic growth nexus for the period 1980-2015. Exports are measured in percentage change of goods sold abroad and findings show a long run relationship between consumption rates and economic growth. They insist that there is need to review export strategies and policies in order to strengthen the economic growth levels in Tanzania. Granger Causality test was applied for finding causality between population growth rate and economic growth. The results indicated significant relation between import and economic development for all six countries. The same analysis has also been conducted for OECD countries by Tahir (2013). The result showed that an increase in inflation rates by one percent is significantly related with economic growth*

Keywords: Foreign Direct Investment, Economic Growth and GDP

INTRODUCTION.

Foreign direct investment refers to equipment and capital that is used to provide goods and services to a host country. It is also seen as a technology transfer from developed or developing countries to another nation (John, 2016).

Olusanya (2013) examined the effect of foreign direct investment on economic growth between 1970 and 2010. According to the study, foreign direct investment and economic expansion are strongly correlated. In accordance with the findings, Nigeria should liberalize its economy to attract the interests of foreign investors. For Nigeria's economic growth to be enhanced, emphasis has to also be paid to establishing a positive domestic policy environment.

Using the ordinary least squares method and also the R-squared concept, Adeleke et al. (2014) examined the impact of foreign direct investment on economic growth in the Nigerian context for the years 1980–2020. Since the p-value was less than 0.05 at a 5% confidence range, the analysis showed a significant positive relationship between foreign direct investment and economic growth. They insisted that for more sustainable growth levels, trade barriers should be removed so as to encourage investors.

The effectiveness of foreign direct investment on Nigerian economic growth was analyzed by Okonkwo et al. (2015) using the Ordinary Least Square method. It was concluded that the coefficient of determination R-squared was greater than the adjusted R-Squared since it takes degrees of freedom into consideration. Economic growth was found to benefit from foreign direct investment. They recommended utilizing economic growth approaches to encourage continuing flows of foreign direct investment throughout Nigeria.

Masipa (2018) highlighted the use of the vector correction model to determine the relationship between foreign direct investment and economic growth in the case of Uganda. It was determined that foreign direct investment and economic growth were significantly strongly correlated and after the initial difference of degree one, nonstationary. As a recommendation for policy, it is necessary to create a positive investment atmosphere in order to increase productivity levels in Uganda.

It is clear that empirical findings are still contested, and much more research is needed. This might be addressed by the different approaches used and the different rates of economic growth. Few studies have been conducted on the effectiveness of Macroeconomic variables, despite the fact that Uganda has seen an increase in FDI influx since the reforms implemented in the

1980s. Most studies have concentrated on identifying the benefits and contributions of FDI to economic development in nations like Uganda, Nigeria, and those in the Association of South East Asian Nations in the global context (ASEAN). The first of these studies on Uganda focused on FDI factors and their impacts on the country's economic growth and was performed by Obwona (1996, 1998). All studies employed time series data and concentrated on the period from 1980 through 2020. These studies all showed a strong correlation between FDI and economic growth that was positive and significant. The time of focus must be updated, and the measurements utilized possess faults. A lot of other studies, such as those by Riddervold (2011), the Ministries of Finance Planning and Economic Development (MFP), and the annual Private Sector Investment Surveys (PSIS), focus on trends of FDI inflows and general problems of investment in Uganda. Studies of Central And South America and the ASEAN region, which are more adequately represented in the empirical studies, as well as developed and emerging countries, give minimal attention to the topic of this study. Few studies have looked at how FDI affects economic growth.

PROBLEM STATEMENT.

With Kampala, Uganda, as a case study, this study attempted to show the relationship between foreign investment and economic growth by using GDP, consumption rates, population size, and inflation rate as proxy variables for the years 1988 to 2018. Empirical evidence has demonstrated a strong positive relationship between economic expansion and inflation rates, consumption rates, population size, and gross domestic product

They need further foreign direct investment (FDI) to enhance their growth rates. Thus, employing annual time series data from the World Bank Index, the study was conducted in order to examine the impact of overseas direct investments (FDI) on Uganda's economic growth (GDP) during the period 1980-2020. In order to test for unit root, the study used the Augmented Dickey-Fuller (ADF) Test, the Limits Test for Co-integration Analysis, and the Auto Regression Distributed Lag model's causality test. At both the level and the first difference of degree one, the ADF test results revealed a combination of stationary and non-stationary variables. The variables' co-integrating factor relationship was proved by the Limits Co-integration test. All variables significantly impacted GDP growth in the short run, based on the ARDL-ECM Coefficient, but still, only FDI, consumption, and inflation rate did so in the long run. According to the research report, an FDI increase of one percent increases GDP by 3.41 percent. However, a shift in FDI as a percentage reduces GDP by 3.20 using the distributed lag model after one lag period, i.e. Y=B O + B (1X 1i) +B 2 X 2i Y (t-1) +Ui., GDP is positively impacted by 3.20 percent when FDI increases as a percentage while other factors remain constant. Furthermore, a one-point margin change in inflation has a 0.43 percent positive impact on GDP while a one-percentage-point-point change in consumption has a 0.22 percent negative impact. It was determined that real direct foreign investment had a beneficial impact on GDP both instantaneously and after lags. The fact that FDI inflows are seen as a significant source of savings and capital accumulation for Uganda, with positive spillovers that improve human capital and give access to cutting-edge technologies, could suggest that FDI inflows are seen as having a positive impact on both short- and long-term economic growth.

Unit root tests were carried out using the Augmented Dickey-Fuller test and findings showed that all variables were non-stationary at level but were differenced to achieve Stationary. The existence of a long-term link between the variables was used to establish co-integration using the Engle-Granger test.

SPECIFIC OBJECTIVES.

1. To evaluate the impact of the inflation rate on economic growth.
2. To analyze the effect of consumption rates on economic growth
3. To determine the impact of population growth rate on economic growth

THE HYPOTHESIS OF THE STUDY

Ho: Inflation rates have no significant relationship with economic growth

Ha: Inflation rates have a significant relationship with economic growth

Ho: Population growth rate has no significant relationship with economic growth

Ha: Population growth rate has a significant relationship with economic growth

Ho: Consumption rates have no significant relationship with economic growth

Ha: Consumption rates have a significant relationship with economic growth

METHODOLOGY.

Methodological approach

Data source

Secondary data for the period 1980 to 2020 was collected and used for analysis in this study. The data was derived from Economic reports, the World Bank's official website (World Bank Open Data 2019), and World Development Indicators data. Data on the consumption rate, inflation, and population growth rate were obtained from government official documents such as the Republic of Uganda's Statistical Abstracts, Ministry of Planning and Economic Development, Economic Surveys, UBOS, Development Plans, Budget, Bank of Uganda publications, Economic Reports, and other sources, including the International Financial Statistics, the World Tables, the Government Financial Statistics and the World Development Reports

Economic modelling.

Overview of the model

GDP=f is the econometric model used in this specific study (inflation rates, population growth rate, consumption rates)

This kind of production function is essentially beneficial for emerging nations like Uganda which are rich in natural resources that must be obtained through expensive imports. This can be expressed in linear form as;

$$\text{InGDP}= B_0 + InB_1 INFLA + InB_2 CONS + InB_3 POP + U_i$$

Where

GDP-Economic growth (current US dollars)

INFLA-Inflation rate

CONS-Consumption rates

POP- population

t-time series observations for the period 1988-2018.

The vestige of other variables is contained predominantly in the error term expressed as u.

Estimation techniques.

Descriptive analysis.

The time series data were descriptively analyzed to ensure the normality of distribution. These include measures of central tendency (mean, median, and mode) and a measure of variability (standard deviation, skewness, and kurtosis)

Correlational analysis.

Correlation tests were carried out to determine whether a statistical relationship exists between the variables and can one variable be predicted from another.

Diagnostic tests.

As a pretest for time series data, stationary tests were carried out using unit root tests. If the data conforms to stationary, a long-run and short-run relationship between the variables was also established for purposes of policy recommendation in Uganda.

Further, to prove the authenticity of the model and the credibility of the empirical results, heteroskedastic tests, and autocorrelation tests were applied to ensure the stability of the model over time.

To determine if there is a statistical relationship between the variables and whether any variable can be predicted from another, correlation tests were performed.

Diagnostic procedures

Stationary tests were performed utilizing unit root tests as a pretest for time series data. A long-run and short-run relationship between the variables was also established for the aim of proposing policy in Uganda if the data are stationary.

Furthermore, heteroskedastic tests and autocorrelation tests were used to verify the model's long-term stability in order to prove the model's truthfulness and the validity of the empirical findings.

RESULTS.

Descriptive statistics. Table 1 presents the summary statistics of the data used in this study and its characteristics that is, measures of central tendency and measures of variation

	N	Minimum	Maximum	Mean	Std. Deviation
inflation	40	4.57	15.13	4.7160	4.61812
GDP	34	7	2316	219.2059	4.99241
POP	37	100.234	3.76	2.8297	1.15398
CONSUMP	37	23	3424	259.4351	5.635

The results demonstrated that since the variable means fall between the minimum and maximum values of the various series, they serve as accurate indicators of central tendency. The average GDP is 219.2059 according to the table above, while the average inflation rate, population growth rate, and consumption rate are 4.7160, 2.8297, and 259.63526, respectively. The maximum GDP is 7, while the maximum GDP's standard deviation is 423.99241. The standard deviation was utilized to measure variability, and the relatively tiny standard deviations show that there were no significant variances among the data. For the variables inflation, population growth rate, consumption and growth domestic product, respectively, these are 1.15398 percent, 4.61812 percent, 4.99241 percent, and 5.635 percent.

CORRELATION ANALYSIS.

Correlation tests are carried out to determine the relationship between the dependent and independent variables.

Table 2 represents the summary of correlation matrix

	GDP	COSUNMP	Population growth rate	Inflation
GDP	1.0000			
CONSUP	0.659 0.090	1.0000		
Population growth rate	-0.165 0.0042	-0.231 0.1423	1.000	
Inflation	-0.231 0.057	-0.0712 0.6623	-0.1650 0.0042	1.0000

Source: World Bank Index

Ho: There is a significant relationship between population growth rate and GDP

Ha: There is a significant relationship between population growth rate and GDP

Ho: There is a significant relationship between inflation and GDP

Ha: There is no significant relationship between the inflation rate and GDP.

Ho: There is no significant relationship between consumption and GDP.

Ha: There is a significant relationship between consumption and GDP

The population growth rate and gross domestic product are negatively associated, with a correlation coefficient of -0.165. At a 5% level of significance, this relationship is statistically significant due to the p-value (0.0041). The relationship between the inflation rate and gross domestic product is weakly negative, with a correlation coefficient of -0.231. Due to the P-value, this relationship is statistically insignificant at the 5% level of significance (0.0057).

With a correlation coefficient of 0.659, consumption and GDP have a moderately strong positive relationship. Due to the P-value, this relationship is statistically meaningful at the 5% level of significance (0.090).

Table 3 represents regression estimation results with Gross domestic product as a dependent variable

Source	**SS**	**df**	**MS**
Model	54.1462229	3	23.76

Residual	239.334083	33	6.25257			
GDP	**Coef.**	**Std. Err.**	**T**	**P>|t|**	**[95% conf.**	**Interval**
cosump	-0.103	4.61812	2.86	0.007	0.2068	1.302
Inflation rate	3.948	4.99241	-0.656	0.529	-0.2855	0.167
Population growth rate	28.664	1.15398	-0.2335	0.0041	-0.12459	0.2356
_cons	61.637	5.635	0.46	0.593	-2,534564	4.7459

Source: World Bank Index

InGDP= $61.637 + In\ 3.948INFLA - In\ 0.103CONS + In\ 28.664POP + U_i$

Ho: There is no significant relationship between inflation and GDP

Ha: There is a significant relationship between inflation and GDP

Ho: There is no significant relationship between consumption and GDP

Ha: There is a significant relationship between consumption and GDP

Ho: There is no significant relationship between population growth rate and GDP

Ha: There is a significant relationship between population growth rate and GDP

Keeping other parameters constant, an increase in the inflation rate would probably result in 3.948 increase in GDP. Since the P-value (0.529)>0.05 makes this statistically insignificant, we fail to reject the null hypothesis Ho1 and arrive at the conclusion that the inflation rate is independent of GDP. Keeping other things steady, an increase in consumption would typically result in a -0.103 loss in GDP. Since the P-value (0.007)>0.05 makes this statistically insignificant, we fail to reject the null hypothesis Ho2 and come to the conclusion that GDP has no impact on consumer behavior. Keeping all other parameters constant, an increase in the population growth rate would typically result in a rise in GDP of 28.664. We reject the null hypothesis since this is statistically significant with a P value of 0. 0041 > 0.05., thus we reject the null hypothesis Ho3 and conclude that the population growth rate depends on GDP.

Unit root tests.
Prior to the analysis of time series data carry out unit root tests to determine whether the variables are constant over time. This is to prevent spurious results. All variables were found to have a unit root at level but are differenced to induce stationarity. This implies LNGDP, LNPOP, LNINFL, LNCONSUMP were integrated of order one.

Table 4 shows Augmented Dickey Fuller test for LNGDP at level and first difference.

At level			
ADF Test Statistic	1.363769	5% Critical Value	-1.9530
At first difference			
ADF Test Statistic	-2.414257	5% Critical Value	-1.9535

Source: Author's computation.

Ho: LNGDP has a unit root.

The null hypothesis that LNGDP has a unit root and the discovery that LNGDP is non-stationary at level lead us to believe that the tau test statistic (1.363769) in absolute terms is smaller than the 5% critical value (-1.9530 in absolute terms) (0).

We reject the null hypothesis and come to the conclusion that LNGDP is stationary and so therefore integrated of order one after differencing since the tau test statistic (-2.414257) in absolute terms is bigger than the crucial value at 5% (-1.9535).

Table 5 shows Augmented Dickey Fuller test for LNIMPORTS at level and first difference

At level			
ADF Test Statistic	-0.5888	5% Critical Value	-2.665
At first difference			
ADF Test Statistic	-3.9015	5% Critical Value	-2.4705

Source: Author's computation.

Ho: LNPOP has no unit root.

Ha: LNPOP has a unit root

The tau test statistic (-0.5888) in absolute terms is less than the 5% critical value (-2.665) in absolute terms thus we accept the unit root and conclude that LNPOP is non-stationary at level hence not I(0).

Upon differencing, LNPOP is stationary since the tau test statistic (-3.9015) in absolute terms is greater than the critical value at 5% (-2.4705) in absolute terms hence we reject the null hypothesis and conclude that LNPOP is stationary at first difference thus integrated of order one.

Augmented Dickey Fuller test for LNINFLA at level and first difference.

At level			
ADF Test Statistic	-2.3467	5% Critical Value	-2.6657
At first difference			
ADF Test Statistic	-3.45677	5% Critical Value	-3.3459

Source: Author's computation.

Ho: LNFDI has a unit root.

The tau test statistic (-2.33467) in absolute terms is less than the 5% critical value (-2.6657) in absolute terms thus we accept the unit root and conclude that LNINFLA is non-stationary at level hence not I(0).

Upon differencing, LNINFLA is stationary since the tau test statistic (-3.3459) in absolute terms is greater than the critical value at 5%(-2.9705) in absolute terms hence we reject the null hypothesis and conclude that LNINFLA is integrated of order one.

Co-integration tests.

If the error term is stationary and the variables are moving in the same direction over time, this is termed to as co-integration (0). If it is determined to be non-stationary, the model is erroneous or useless. The LNGDP, INPOP, INCONSUMP, and ININFLA long run model was computed. The Augmented D-Fuller test was used to examine the residuals, and it showed that they were stationary at a significance level of 5%.

Table 5 shows Augmented Dickey Fuller test for residuals at level.

Variable	ADF test statistic	5% critical value	ADF test statistic	5 % critical value	ADF test statistic	5%critical value
Residual	-3.740692	-2.9665	--3.9015	-2.4705	-3.45677	-2.6657

Residuals from the long run equation are found to be stationary since the tau statistics in absolute terms are greater than the 5% critical value in absolute terms at level thus concluding that the residuals are stationary. This confirms that co-integration exists

amongst LNGDP, INPOP, INCONSUMP and ININFLA thus the need to carry out an error correction model for estimation of results.

Diagnostic post estimation tests.
Diagnostic tests were carried out to ensure the residuals are normally distributed, homoscedastic and no availability of auto correlation.

Test for heteroscedasticity

Ho: The model is correctly specified.

Table 6 represents test for heteroscedasticity

Ramsey Reset Test	F-Statistic F(3,37)	F-Statistic Prob>F
	3.78	0.0897

We accept the null hypothesis and conclude that the model is correctly specified since the probability value (0.0897) is greater than 0.05

Test for auto correlation
Breusch-Godfrey Serial Correlation LM Test:

Ho: There is no serial correlation.

Ha: There auto correlation

Table 7 Represents test for auto correlation

Breusch- Godfrey LM Test			
Lags p	Chi2	Df	Probability>chi2
1	4.765	1	0.567

Source: world Bank index

Since the probability is less than 0.005, the null hypothesis is accepted and the conclusion made that there is no auto correlation.

CONCLUSION

Dickey Fuller test and findings showed that some variables were non-stationary at level but were differenced to achieve stationarity. Co-integration was established using Engle Granger Co-integration test citing existence of a long run relationship amongst the variables. The speed of adjustment of the variables to long run was 47 percent within a one-year lag period. 88 percent of the variations in Economic growth were jointly explained by gross domestic product, population growth rate, inflation rates and consumption rates. 25 percent of the variations in economic growth were explained by other variables contained in the error term thus not included in the model. The F statistic was statistically significant thus inflation rate and population growth rate have a significant effect on economic growth in the short run. Autoregressive distributed lag model approach was used and the results confirmed export led hypothesis for the long run and not short run. He proposed the liberalization of trade policy instead of export expansion policies. In the Tanzanian Context, Romanus & Dickson (2019) have analyzed the export and economic growth nexus for the period 1980-2015. Exports are measured in percentage change of goods sold abroad and findings show a long run relationship between consumption rates and economic growth. They insist that there is need to review export strategies and policies in order to strengthen the economic growth levels in Tanzania. Granger Causality test was applied for finding causality between population growth rate and economic growth. The results indicated significant relation between import and economic development for all six countries. The same analysis has also been conducted for OECD countries by Tahir (2013). The result showed that increase in inflation rates by one percent is significantly related with economic growth

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Country Name	Years	Inflation, consumer prices (annual %)	Population growth (annual %)	GDP	CONSUMPTION
Uganda	1980	0.03676	3.02871	5674	27685463
Uganda	1981	6.55014	3.04785	6508	266300000
Uganda	1982	7.19165	3.1032	52764	277700000
Uganda	1983	0	3.20457	430439	177800000
Uganda	1984	0.0688	3.44933	33217290	194000000
Uganda	1985	0	3.5361	2857457860	185700000
Uganda	1986	5.77737	3.53926	3220439044	293620000
Uganda	1987	3.39202	3.46693	3990430447	527100000
Uganda	1988	1.86513	3.39412	5755818947	664300000
Uganda	1989	-0.2875	3.33116	6044585327	784030000
Uganda	1990	8.68048	3.25602	6269333313	757240000
Uganda	1991	3.72129	3.16969	6584815847	686480000
Uganda	1992	8.44873	2.99043	5998563258	679500000
Uganda	1993	0	2.91705	6193246837	663100000
Uganda	1994	0	2.8919	5840503869	684158462.1
Uganda	1995	13.0173	2.92493	6178563591	702853884
Uganda	1996	3.97655	0	6336696289	834006688.3
Uganda	1997	15.1252	0	7940362799	1132286453
Uganda	1998	12.6787	0	9013834373	1542022925
Uganda	1999	4.90271	0	9942597780	1735592050
Uganda	2000	3.07468	0	12292813603	2439027028
Uganda	2001	5.41	3.15329	14239026630	3039719573
Uganda	2002	5.44576	3.15181	18168902154	3353745530
Uganda	2003	5.64093	3.1559	20186496527	3468077635
Uganda	2004	2.62398	3.16753	20176025257	4298479346

Uganda	2006	2.86909	3.18661	23114293416	4935836850
Uganda	2007	3.79442	3.18245	243567	4931775815
Uganda	2008	2.34567	3.18075	345229775	4905294915
Uganda	2009	5.89754	3.23378	2345885	4728648692
Uganda	2010	-4.5674	3.35268	246789	4836478690
Uganda	2011	4.34658	3.49775	33466879	5089596924
Uganda	2012	2.45639	3.65686	3455679	5607062106
Uganda	2013	10.6754	3.75569	344677889	456789
Uganda	2014	2.78654	3.72516		
Uganda	2015	2.56744	3.54193	234566	34457793
Uganda	2016	10.679	3.26971		345675324
Uganda	2017	14.7689	3.23457		977865423
Uganda	2018	7.5689			657589934
Uganda	2019	-3.4564			
Uganda	2020	8.56789			